



U.S. Department of Energy
Office of River Protection

**P.O. Box 450
Richland, Washington 99352**

02-OSR-0375

Mr. R. F. Naventi, Project Manager
Bechtel National, Inc.
3000 George Washington Way
Richland, Washington 99352

Dear Mr. Naventi:

CONTRACT NO. DE-AC27-01RV14136 – APPROVAL OF BECHTEL NATIONAL, INC. (BNI) AUTHORIZATION BASIS CHANGE NOTICE (ABCN) 24590-WTP-ABCN-ESH-02-005, REVISION 0, "SELECTION OF IMPLEMENTING STANDARDS FOR ITS CRANE COMPONENTS"

- References:
1. BNI letter from A. R. Veirup to M. K. Barrett, ORP, "Transmitted for Approval: Contract Deliverable 'Revised Standards Approval Package – Update' and Associated Authorization Basis Change Notices in Support of the SRD Standards Approval Package Submittal," CCN: 027635, dated February 19, 2002.
 2. ORP letter from R. C. Barr to R. F. Naventi, BNI, "Questions on the Standards Approval Package – Update and Revision 1 to Associated Authorization Basis Change Notices in Support of the SRD Standards Approval Package," 02-OSR-0168, dated April 23, 2002.
 3. BNI letter from A. R. Veirup to M. K. Barrett, ORP, "Closeout Comments on Low Activity Waste Construction Authorization Requests," CCN: 035142, dated August 6, 2002.

The U.S. Department of Energy, Office of River Protection has reviewed ABCN 24590-WTP-ABCN-ESH-02-005, Revision 0, "Selection of Implementing Standards for ITS Crane Components," submitted in Reference 1.

During the review, several questions were developed, and in Reference 2, BNI was requested to respond to those questions. Additional changes to the ABCN were submitted on August 6, 2002 (Reference 3). These additional changes were also evaluated.

The proposed changes consist of additions to the Implementing Codes and Standards section of Safety Requirements Document (SRD) Safety Criterion 4.1-2. BNI had also proposed new sections to SRD Appendix C, Implementing Standards, to describe specific tailoring. However, BNI's response in Reference 3 withdrew the proposed new sections for specific tailoring.

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Based upon evaluation of the changes proposed in Reference 1, and those additional changes proposed in Reference 3, the changes are acceptable, and there is reasonable assurance that the health and safety of the public and the workers, and the environment will not be adversely affected by those changes, and they comply with applicable laws, regulations, and RPP-WTP contractual requirements. Attached is the Safety Evaluation Report (SER). Because additional changes were proposed, incorporation of the additional changes is a condition of acceptance of the ABCN, as discussed in the attached SER.

As part of the amendment implementation process, please submit within 14 days of receipt of this letter the revised pages of the SRD, identifying all revisions to date. This amendment is effective immediately and shall be fully implemented within 30 days; i.e., the provisions of the amendment may be used immediately; within 30 days, controlled copies of the SRD and subordinate documents must be modified to reflect the changes associated with this amendment.

If you have any questions, please contact me, or your staff may call W. J. Pasciak, Office of Safety Regulation, (509) 373-9189.

Sincerely

Roy J. Schepens
Manager

OSR:WJP

Attachment

**Safety Evaluation Report (SER)
of Proposed Authorization Basis Change Notice
24590-WTP-ABCN-ESH-02-005, Revision 0
for the River Protection Project-Waste Treatment Plant (RPP-WTP)**

1.0 INTRODUCTION

The RPP-WTP authorization basis is the composite of information, provided by Bechtel National, Inc. (the Contractor) in response to radiological, nuclear, and process safety requirements, that is the basis on which the Office of River Protection (ORP) Manager grants permission to perform regulated activities. The authorization basis includes that information requested by the Contractor for inclusion in the authorization basis and subsequently accepted by ORP. The authorization basis for the RPP-WTP includes the Safety Requirements Document (SRD) and the Integrated Safety Management Plan (ISMP). The SRD contains the approved set of radiological, nuclear and process safety standards and requirements, which if implemented, provide adequate protection of workers, the public, and the environment against the hazards associated with the operation of the facility. The ISMP contains the safety management practices developed specifically for the project in the areas of design, construction, commissioning, and operation. By letters dated February 19, 2002,¹ and August 6, 2002,² the Contractor submitted proposed amendments to the SRD. This SER documents the evaluation of the changes proposed by the Contractor.

2.0 BACKGROUND

The SRD contains the set of radiological, nuclear, and process safety standards necessary to ensure adequate protection of the health and safety of workers, co-located workers, the public, and the environment from radiological, nuclear, and process hazards. The SRD standards are developed via an iterative process. Included in the development process is a continuing review of industry practices, particularly those referenced in the SRD, and review of the results of the process hazards and accident analyses as they evolve with the design of the facility for potential impacts on the SRD standards used to ensure protection of the public, workers, and the environment.

The Contractor has proposed changes to the SRD in the February 19, 2002, letter. During the review of the proposed changes, several technical questions evolved, and by letter dated April 23, 2002,³ BNI was requested to respond to those questions. The August 6, 2002, BNI letter responded to the questions with proposed changes to the ABCN.

¹ BNI letter from A. R. Veirup to M. K. Barrett, ORP, "Transmitted for Approval: Contract Deliverable Revised Standards Approval Package - Update and Associated Authorization Basis Change Notices in Support of the SRD Standards Approval Package Submittal," CCN: 027635, dated February 19, 2002.

² BNI letter from A. R. Veirup to M. K. Barrett, ORP, "Closeout Comments on Low Activity Waste Construction Authorization Requests," CCN: 035142, dated August 6, 2002.

³ ORP letter from R. C. Barr to R. F. Naventi, BNI, "Questions on the Standards Approval Package – Update and Revision 1 to Associated Authorization Basis Change Notices in Support of the SRD Standards Approval Package," 02-OSR-0168, dated April 23, 2002.

The proposed changes consist of additions to the Implementing Codes and Standards section of Safety Requirements Document (SRD) Safety Criterion 4.1-2. BNI had also proposed new sections to SRD Appendix C: Implementing Standards to describe specific tailoring. However, BNI's response to questions withdrew the proposed new sections for specific tailoring.

The following section documents the evaluation of the proposed changes to SRD Safety Criterion 4.1-2.

3.0 EVALUATION

Proposed Changes to the Implementing Codes and Standards Section of SRD Safety Criterion 4.1-2:

Description of Changes:

Add the following as Implementing Codes and Standards:

- DOE-RL-92-36, Hanford Site Hoisting and Rigging Manual.
- CMAA 70 – 2000, Specifications for Top Running Bridge and Gantry Type Multiple Girder Electric Overhead Traveling Cranes (supplemented with AMSE NOG 1-2002, Sections NOG-1140, NOG-4150, NOG-5482, NOG 6120b, and NOG-6150 for SDS cranes). Note: Seismic acceleration loads shall be included in the extraordinary loadings identified in CMAA 70.⁴
- CMAA 74 – 2000, Specifications for Top Running and Under Running Single Girder Electric Overhead Traveling Cranes Utilizing Under Running Trolley Hoist (supplemented with ASME NUM 1-2000 [with NUM 1a-2002 Addenda] Sections NUM-G2000, NUM-II-7000, NUM-II-8200, NUM-II-8300, and NUM-II-8400 for SDS cranes). Seismic acceleration loads shall be included in the extraordinary loadings identified in CMAA 74.
- ASME NUM 1-2000 (with NUM 1a-2002 Addenda), Rules for Construction of Cranes: Monorails and Hoists (With Bridge or Trolley or Hoist of the Underhung Type) (For SDC cranes only).
- ASME NOG 1-2002, Rules for Construction of Overhead and Gantry Cranes (Top Running Bridge, Multiple Girder) (For SDC cranes only).

[Note: The changes described above include the additional changes proposed in BNI's August 6, 2002, response to the April 23, 2002, request for additional information.]

Evaluation: (Acceptable)

⁴ During a meeting between BNI staff (J. Weamer, et. al.) and ORP staff (W. Pasciak), the Contractor requested the Note be added to the reference to CMAA 70 and CMAA 74.

The proposed changes are acceptable because they identify appropriate codes, standards and design features upon which the important-to-safety (ITS) cranes will be based and they were selected using the approved standards selection process. Previously, SRD Safety Criterion 4.1-2 had no implementing codes and standards for ITS cranes. Adding these codes and standards to Safety Criterion 4.1-2 will ensure that the ITS crane and crane components meet their safety functions as identified in the ISM process. The following is a discussion of each code and standard presented in the proposed changes:

1. DOE-RL-92-36, Hanford Site Hoisting and Rigging Manual.

The Hanford Site Hoisting and Rigging Manual (DOE-RL-92-36) is the standard for all Hanford site hoisting and rigging. It embodies the principles of DOE-STD-1090-2001, *DOE Standard Hoisting and Rigging*, utilized widely throughout the DOE sites. The Hanford Site Hoisting and Rigging Manual is consistent with OSHA crane regulations and ANSI crane standards.

2. CMAA 70 - 2000, Specifications for Top Running Bridge and Gantry Type Multiple Girder Electric Overhead Traveling Cranes (supplemented with ASME NOG 1-2002, Sections NOG-1140, NOG-4150, NOG-5482, NOG-6120b, and NOG-6150 for SDS cranes).

The CMAA design specifications are written for general non-nuclear industry use, and they must be supplemented by additional standards when utilized in nuclear facilities to mitigate natural phenomenon and environmental conditions that could lead to an unacceptable release of radioactivity during the operational life of the facility (specifically, seismic qualification and radiation resistance). ASME NOG 1 provides nuclear industry rules for multiple girder overhead cranes. Supplementing CMAA 70 with ASME NOG 1, Section 1140 ensures SDS cranes and crane components are protected against environmental conditions (Radiation, Temperature, Pressure, Humidity, and Chemical). Supplementing CMAA 70 with ASME NOG 1, Section 4150 and Section 5482 ensures SDS cranes and crane components are designed using the appropriate Seismic Analyses. Supplementing CMAA 70 with ASME NOG 1, Section 6120b and Section 6150 ensures appropriate design of electrical components for seismic and radiation exposure considerations.

BNI has specified CMAA 70 - 2000 supplemented by ASME NOG 1-2002. These are the most current of these industry standards.

3. CMAA 74 – 2000, Specifications for Top Running and Under Running Single Girder Electric Overhead Traveling Cranes Utilizing Under Running Trolley Hoist (supplemented with ASME NUM 1-2000 [with NUM 1a-2002 Addenda] Sections NUM-G2000, NUM-II-7000, NUM-II-8200, NUM-II-8300, and NUM-II-8400 for SDS cranes).

The CMAA design specifications are written for general non-nuclear industry use, and they must be supplemented by additional standards when utilized in nuclear facilities to

mitigate natural phenomenon and environmental conditions that could lead to an unacceptable release of radioactivity during the operational life of the facility (specifically, seismic qualification and radiation resistance). ASME NUM 1 provides nuclear industry rules for underhung cranes, top-running bridge and gantry cranes with underhung trolleys, traveling wall cranes, jib cranes, monorail systems, overhead hoists, and hoists with integral trolleys used in nuclear facilities. Supplementing CMAA 74 with ASME NUM 1, Section NUM-G-2000 ensures that SDS cranes and crane components are designed to withstand the effects of the specified environmental conditions of service (Radiation, Temperature, Pressure, Humidity, Chemical, Wind, and Seismic). Supplementing CMAA 74 with ASME NUM 1, Section NUM-II-7000 ensures that SDS hoists and trolleys remain in place during and after a seismic event. Supplementing CMAA 74 with ASME NUM 1, Sections NUM-II-8200, NUM-II-8300, and NUM-II-8400 ensures that SDS cranes and crane components are structurally, mechanically, and electrically designed to withstand seismic loading.

BNI has specified CMAA 74 - 2000 supplemented by ASME NUM 1-2000 (with NUM 1a-2002 Addenda). These are the most current of these industry standards.

4. ASME NUM 1-2000 (with NUM 1a-2002 Addenda), Rules for Construction of Cranes: Monorails and Hoists (with Bridge or Trolley or Hoist of the Underhung Type) (for SDC cranes only).

For SDC cranes and crane components, BNI has invoked the requirements of ASME NUM 1-2000 (with NUM 1a-2002 Addenda), the most current version of the standard. This is the current nuclear industry standard for these types of cranes in nuclear facilities. Using this standard ensures that SDC cranes and crane components are appropriately designed to withstand the seismic and environmental considerations specified. This standard also specifies the testing and inspection requirements for Type I, Type II, and Type III cranes.

5. ASME NOG 1-2002, Rules for Construction of Overhead and Gantry Cranes (Top Running Bridge, Multiple Girder) (for SDC cranes only).

For SDC cranes and crane components, BNI has invoked the requirements of ASME NOG 1-2002, the most current version of the standard. This is the current nuclear industry standard for these types of cranes in nuclear facilities. Using this standard ensures that SDC cranes and crane components are appropriately designed to withstand the seismic and environmental considerations specified. This standard also specifies the testing and inspection requirements for Type I, Type II, and Type III cranes.

The reviewers concluded that the application of these codes and standards is appropriate for the design and construction of WTP cranes, and is consistent with the safety requirements of Safety Criterion 4.1-2.

Additional Discussion:

In response to questions, BNI committed to make the following changes regarding SRD Safety Criterion 4.1-2:

- ASME NOG 1-1995 will be changed to ASME NOG 1-2002 throughout the ABCN and attachments.
- The ANSI MH 27.1 reference is deleted. References to MH 27.1 and MH will be removed throughout the ABCN documents.
- The revision dates will be inserted for the following standards throughout the ABCN and attachments: CMAA 70 – 2000 and CMAA 74 – 2000
- ASME NUM 1-2000 will be changed to ASME NUM 1-2000 (With NUM 1a-2002 Addenda)

These additional changes proposed by BNI as a result of their responses to questions were addressed in the above safety evaluation and are also acceptable. BNI's implementation of these additional changes is a condition of acceptance of the ABCN.

4.0 CONCLUSION

Based on evaluation of the proposed changes described above, the proposed changes are acceptable, and there is reasonable assurance that the health and safety of the public and the workers, and the environment will not be adversely affected by the proposed changes. Furthermore, the proposed changes comply with applicable laws, regulations, and RPP-WTP contractual requirements. As noted in the evaluation above, additional changes were proposed to the ABCN as a result of BNI's responses to questions. BNI's implementation of those additional changes is a condition of acceptance of the ABCN.